

August 16, 2007



U.S. Department  
of Transportation

1200 New Jersey Ave. SE  
Washington, D.C. 20590

**Pipeline and Hazardous  
Materials Safety Administration**

DOT-SP 13280  
(SECOND REVISION)

EXPIRATION DATED: January 31, 2010

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Ovonic Hydrogen Systems, L.L.C.  
Rochester Hills, MI
2. PURPOSE AND LIMITATIONS:
  - a. This special permit authorizes the manufacture, marking, sale, and use of hydrogen storage systems for use in fuel cells. The hydrogen storage systems utilize non-DOT specification cylinders containing hydrogen absorbed in metal hydride. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in development of this special permit only considered the hazards and risks associated with transportation in commerce. The safety analyses did not consider the hazards and risks associated with consumer use, use as a component of a transport vehicle or other device, or other uses not associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.301a(d)(1) in that the non-specification cylinder is fitted with pressure relief devices that do not meet the requirements of CGA S-1.1 and § 173.301(c) in that the material within the cylinder has the potential to endanger the cylinder's serviceability.

**August 16, 2007**

5. BASIS: This special permit is based on the application of Ovonic Hydrogen Systems, L.L.C. dated April 10, 2007, submitted in accordance with § 107.105 and the public proceeding thereon.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

<b>Hazardous Material Description</b>			
<b>Proper Shipping Name</b>	<b>Hazard Class/ Division</b>	<b>Identification Number</b>	<b>Packing Group</b>
Hydrogen absorbed in metal hydride	2.1	NA9279	N/A
Hydrogen in a metal hydride storage system	2.1	UN3468	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a hydrogen storage system (canister) incorporating a non-DOT specification cylinder containing hydrogen absorbed in metal hydride. The cylinder must have a design service pressure of at least 1,800 psig and a maximum water capacity of 5 pounds. The hydrogen storage system must be manufactured and certified in accordance with Ovonic Hydrogen Systems (OHS) Internal Product Standard 550002-2003 on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). The hydrogen storage system must be in conformance with the following:

(1) Pressure relief devices. The cylinder must be equipped with a CGA CG-7 pressure relief device with a rated start to discharge pressure of at least 1,175 psig and with a CGA CG-10 thermal relief device. Alternatively, each cylinder may be equipped with a CGA CG-12 combination relief device meeting both the criteria of the CG-7 and CG-10 devices above, in accordance with the CGA Pamphlet S-1.1. For cylinders less than 4 ½ inch (114mm) in diameter and 12 inch (305mm) in overall length, a CGA CG-9 217°F fusible plug is authorized as recommended in CGA Pamphlet S-1.1. The entire hydrogen storage system must successfully pass a fire test as described in CGA

Pamphlet C-14. The system must be fire tested by an independent testing laboratory.

(2) The hydrogen storage system must be equipped with an internal geometric configuration or other means that prevents the metal hydride within from exerting detrimental forces on the cylinder. Verification of the design must be on file with the OHMSPA.

(3) The cylinder must be designed, manufactured, and tested in accordance with OHS Internal Product Standard 550003-2003 on file with the OHMSPA. The cylinder must be in conformance with all requirements of a DOT Specification 3AL-1800 cylinder (49 CFR §§ 178.35 and 178.46) except that in § 178.35(f)(1)(i) "DOT-SP 13280-400" must be permanently marked in lieu of "DOT 3AL-1800".

b. TESTING - Each cylinder must be successfully requalified at least once every five years by a DOT approved 100% ultrasonic examination method in lieu of the internal visual inspection and hydrostatic pressure test specified in §180.205(f) and (g). Ultrasonic examination and marking must be performed in conformance with the requirements of a valid DOT special permit for the requalification of DOT Specification 3AL cylinders.

c. MARKING - Each cylinder must be marked "DOT-SP 13280". Each outside packaging must be marked "INSIDE PACKAGING COMPLIES WITH DOT-SP 13280."

d. OPERATIONAL CONTROLS

- (1) The hydrogen storage system will be used for hydrogen fuel cells to power portable devices.
- (2) Refilling must be performed by OHS or its designated agents.
- (3) Inspection and charging of the cylinder must be performed in accordance with OHS Refill Specification For Portable Ovonic Solid Hydrogen Storage Systems, document #600001-2004, on file with the OHMSPA.
- (4) The maximum charging pressure of the hydrogen storage system must be 400 psig.

**August 16, 2007**

- (5) The hydrogen storage system must be shipped in strong outside packaging in accordance with § 173.301(a)(9).

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

b. A current copy of this special permit must be maintained by the grantee and distributors of the hydrogen storage system.

c. Each packaging manufactured under the authority of this special permit must be either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) marked with a registration symbol designated by the Office of Hazardous Materials Special Permits and Approvals for a specific manufacturing facility.

d. A current copy of this special permit must be maintained at each facility where the package is manufactured under this special permit. It must be made available to a DOT representative upon request.

e. OHS must carry out an in-service testing plan as described below and in the Coleman Powermate letter (ref DOT-SP 12650) dated December 10, 2001 on file with the OHMSPA:

Canister Samples	Pressure Reversal Cycles (each canister)	Test completed by *
3	100	6 months
3	200	12 months
3	300	18 months
3	500	24 months

\* Dates are from the first date of canister production

(1) Each canister containing hydrogen absorbed in metal hydride must be subjected to pressure reversal cycles between zero and a settled pressure of 230 - 260 psig at 70°F. At the completion of cycling, each canister must be subjected to a burst pressure test in accordance with 49 CFR § 178.46(c)(5)(ii).

(2) OHS must submit test results to OHMSPA within 14 days of the completion of each six month phase. Test results must include number of cycles completed, cycling pressure, mode of failure, and bursting pressure.

f. Packagings permanently marked 'DOT-E 13280', prior to October 1, 2007, may continue to be used under this special permit for the remaining service life of the packaging or until the special permit is no longer valid. Packagings marked on or after October 1, 2007, must be marked 'DOT-SP 13280'.

g. Shipping papers displaying 'DOT-E 13280' may continue to be used until October 1, 2007, provided the special permit remains valid.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle and rail freight.
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle used to transport packages covered by this special permit.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
  - o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
  - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.

- o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)—"The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Theodore L. Willke  
Associate Administrator for Hazardous Materials Safety

**August 16, 2007**

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at

[http://hazmat.dot.gov/sp\\_app/special\\_permits/spec\\_perm\\_index.htm](http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm)

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PO: CWFREEMAN